PUBLIC REDACTED

Exhibit 7

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

IN RE GOOGLE PLAY STORE ANTITRUST LITIGATION	:	Case No. 3:21-md-02981-JD
This Document Relates To:	:	
State of Utah et al. v. Google LLC et al. Case No. 3:21-cv-05227-JD	:	
Match Group, LLC et al. v. Google LLC et al. Case No. 3:22-cv-02746-JD	:	
Epic Games Inc. v. Google LLC et al. Case No. 3:20-cv-05671-JD	:	
In Re Google Play Consumer Antitrust LItigation Case No. 3:20-cv-05761-JD	:	

** ATTORNEYS' EYES ONLY **
TUESDAY, APRIL 4, 2023

Video Recorded and Remote Zoom Deposition of HAL J. SINGER, Ph.D., taken pursuant to Notice, at the law offices of Munger, Tolles & Olson LLP, 601 Massachusetts Avenue NW, Washington, DC, commencing at approximately 9:11 a.m., on the above date, before Rose A. Tamburri, RPR, CM, CCR, CRR, USCRA Speed and Accuracy Champion and Notary Public.

[redacted]

ATTORNEYS' EYES ONLY

[redacted]

Logit model is known as the independence of a relevant alternative's property?
A. Yes.
Q. And the independence of a relevant alternative's property says that all products being studied in the Logit model should be substitutes in proportion to their share?
A. I think that's fair.
Q. Okay.
Now, if the indepen -- indepen -- if the -- well, let's back up.
Can we call it the independence of a relevant alternative's property IIA?
A. Sure.
Q. Okay.
And if the IIA assumption is not satisfied in the Logit model, then the Logit model can lead to unrealistic forecasts; is that right?
A. I'm not going to say so necessarily. I think that it could produce estimates that are different than the true parameters that you're hoping to estimate, but I think the word that you used was unreliable? And I felt --

Q. Well --
A. -- I felt like that was too harsh.
Q. Well, let me just ask you this:
Does your Logit model satisfy the IIA property?
A. I believe it does, yes.
Q. And if your Logit model does not satisfy IIA, would that lead you to have any concern that its forecasts are unrealistic?
A. Well, it would depend on -- on how badly these assumptions were violated. So I think that they're not. I think that the -- the groupings here were economically reasonable. These are not my groupings; these are Google's groupings that are then self-selected by the -- by the apps.
And there are tests for IIA, I think Haus -- Hausman and maybe McFadden have developed a test. It's -- it has its flaws as well. Those tests are not feasible here because we don't have consumer level data. We're -- we're just seeing the apps shares. So we'd have to drop the entire app out of the dataset, in which case you'd get the same findings, and so you'd always affirm the IIA.

Your experts, of course, didn't show that IIA wasn't satisfied through those tests either, which I think is confirmation that we can't do those tests. But I feel confident the IIA is reasonably satisfied here.

MS. GIULIANELLI: We can -- you can continue on, but at some point, let's take a break. We're -- I don't want to interrupt your --

MR. RAPHAEL: I'm happy to take a break now.

THE WITNESS: Great.

THE VIDEOGRAPHER: Going off record, the time is 10:37.

(Whereupon, a recess was taken at the above time.)

THE VIDEOGRAPHER: Going back on the record. The time is 10:47.

BY MR. RAPHAEL:

Q. Dr. Singer, is it your opinion that Google established the categories in the Play Store with the IIA property in mind?

A. That is doubtful. I think the record evidence tells us that Google established the

categories based largely on how Apple chose its categories.

Now, it's possible that just as a -- a pool player doesn't have physics in the back of their mind, that they're -- they're respecting the laws of physics. I think that's a famous Bill Friedman quote, that when Google is assembling its categories, it's doing it in a way that satisfies the IIA.

But it certainly would be astounding if -- if they had, if some marketing person had the IIA at the top of the mind when they were selecting the categories.

Q. Right.

Because to your knowledge, Google's decision with -- to establish the categories in the Google Play Store was made as a matter of marketing?

MS. GIULIANELLI: Objection to form.

THE WITNESS: I think -- I think that as I just stated, the record evidence suggests that Google was -- [redacted], and I think that ultimately Google wants to

maximize the profits of the -- of the Play Store, and so it wants consumers to be able to find things easily and sensibly and it's -- it's profit drivenal; how about that?

BY MR. RAPHAEL:

Q. And in trying to maximize the profitability of the Play Store, Google established the categories by reference to the categories in the Apple App Store; is that right?

A. In part, yes. That Google -- that Apple made presumably intelligent choices, Apple's App Store was doing well and -- and Google figured that [redacted].

Q. Okay.

If the IIA assumption is not satisfied, then the Logit model can lead to unrealistic forecasts.

Do you agree with that?

A. No, I think -- I think you asked me that earlier, and I think that it depends on

the degree to which it's not satisfied, right?

In any econometric model, just even ordinary lease squares, we -- we -- we make all sorts of demands on the nature of the error terms in the model, just as we do here. And there are -- there are errors, there are violations and there are other violations. And so I wouldn't -- I wouldn't condemn it based on -- on some small violation.

I think -- I think that if the categories were haphazardly assigned or done without any kind of economic logic such that consumers did not perceive, or at least some consumers did not perceive the elements to be substitutes, that -- that you could get unreliable forecasts.

Q. Okay.

So if consumers do not believe that the products being studied in the Logit model are substitutes, you can get unreliable forecasts?

MS. GIULIANELLI: Objection to the form.

THE WITNESS: I think that the better -- the better requirement, or the more

formal requirement, is that if -- if this property of substitution that is at the heart of Logit, which is this proportional substitution, that people tend to go places with higher shares, then you could get a less accurate forecast than -- than -- than you would hope.

I think that unreliable is -- is fairly strong language, so I'm reluctant to go that far.

MR. RAPHAEL: Okay.

BY MR. RAPHAEL:

Q. And what is the standard for when IIA has been violated to such a degree that you think that the -- using the Logit model would lead to forecasts that are inaccurate?

A. So here's some things I -- I would want to look for, is did the categories make economic sense, all right? Is there -- is there good economic basis to believe that both the developers and the consumers perceived those cat -- categories to define the contours of competition? And I think we have that here.

But the second thing that I'd want

trying to predict are, say, the -- the predicted shares within a category and he thinks that those forecasts could be off, that's not the forecast that I'm making. So it's just the word "forecast" is so general that it's hard for me to -- to say that it has much relevance here.

Q. Do you agree that the Logit model can produce seriously misleading forecasts if IIA fails?

A. Seriously misleading forecasts?

Q. Um-hmm.

A. Well, so here we're trying to predict pass-through rates, and I don't think that our pass-through rate forecast is going to be seriously misleading for some minor infraction of the IIA. And in particular, you know, what's happening is that on a technical matter, we're -- we're concerned about some unobserved attribute being correlated with the error terms. But if the groupings are done in an intelligent fashion, all these error terms are going to cancel. They're going to wash out.

And so I feel like -- I feel like

ATTORNEYS' EYES ONLY

[redacted]

[redacted]

intent that was at the front of my mind was will the Logit model do a good job or a bad job at explaining substitution patterns within a given category, right? And implicit in that objective is whether the IIA was satisfied.

Q. Did you cite any published economics article in your reports to establish that it's appropriate to test the IIA assumption using the kind of regression that you did?

A. I don't think I've cited articles in my report that my test was a test of IIA. I think that I feel confident that IIA was satisfied by virtue of the fact that Google selected the categories, the developers selected in, the model fit well and then finally, I tested the model under other demand specifications.

There was quite literally nothing else that I could do and there was nothing that your expert did in rebutting it, zero.

Q. Right.

A. Nothing. Dr. Leonard did no test of the IIA.

Q. Right.

Other than the regression that you

did, there was no way for you to test whether the IIA assumption was met; is that right?

A. No, that's not right. You're not -- you're not hearing what I'm saying.

I have confidence that the IIA was satisfied because these are economically sensible categories that were designed by Google, that were selected into by the developers. And then when we go to do the actual fit, had the results come back differently, had the coefficients been the wrong sign, had they not been significantly significant, had the R-squareds been low, and then had another demand model done a better job at explaining the variation of the substitution patterns in the data, I would have abandoned Logit.

Q. Okay.

Other than your regression, was there any test you are aware of that you could have applied to determine whether the IIA assumption was met?

A. Yes, and I now feel like I'm repeating myself. There is the Hausman-McFadden test.

Q. But you couldn't apply that here, could you?

A. Let me finish. Let me just finish.

Yeah, the Hausman-McFadden test requires you to drop all consumers from the data who selected a particular choice and then re-estimate the model and -- and compare the coefficients, right?

Yes, you cannot do that here because we don't have that kind of granularity in the data.

Q. Are you aware of any source in economics that indicates that it is an appropriate and reliable way to test for the IIA assumption to do the kind of regression that you did here?

A. I don't think that that's how you'd find it in a textbook. I think that the way that an econometrician would counsel you is you have an assumption about how consumers choose within a category; right? If the model doesn't fit well, then that would tend to indicate that assumption is violated. But it starts with the -- with the goodness of fit of the model itself.

Q. Okay.

Are you aware of any source in economics that indicates that it's a reliable way to test for the IIA assumption to do the kind of regression that you did?

A. Let me hear it back. I'm sorry.

Q. Are you aware of any source in economics that indicates that doing the regression that you did is an appropriate and reliable way to test for whether the IIA assumption is met?

A. I don't know if -- if I can point you, sitting here, to an economic source for that proposition, but what -- what economics counsels is that to determine whether a model is appropriate, you need good economic foundation and you need a goodness of fit in the data.

And then finally, what I did is I tried alternative specifications. I don't think there's anything else that we can do.

Q. Okay.

Are you aware of any source in economics that goodness of fit is an appropriate way to test for the IIA

assumption?

A. No. The way that the economics will tell you is that goodness of fit will tell you if the Logit is a -- is a -- is the relevant way to describe preferences in substitution patterns here.

Now, IIA is lurking in the background of all of that.

Q. Right.

But you're not aware of any source in economics that goodness of fit is an appropriate way to test for the IIA assumption directly?

MS. GIULIANELLI: Objection to the form.

THE WITNESS: I think that if you go into the economic literature and you see the vast application of Logit in antitrust, mergers in particular, I think that for an economist or an agency, or an agency's economist to feel good about using Logit, what they care most about is whether the categories were constructed intelligently and with a good grounding in economics and in -- in record evidence.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

would -- that would somehow not move, and it's something below a half a percent. It's de minimus.

Q. Right. So let's -- let's look at that. That's page 203 of your opening Merits report.

A. Okay.

Q. And this is Table 17.

A. Yes.

Q. So you find there that some non-zero amount of developers would not reduce their prices if they were committed to having their prices end in 9; isn't that right?

A. Correct.

Q. Do you know how many developers that -- that amounts to?

A. Sitting here, I don't, but it's -- should be easy to figure out the backup.

Q. Did you run a version of this table in your reports with the assumption that developers would want to set prices ending in 99?

A. I did not.

Q. Okay.

And do you know the percentage of

ATTORNEYS' EYES ONLY

[redacted]

[redacted]

[redacted]

you tried to do the derivative in your head.

I think that when you look at the traditional models of pass-through, which, remember, are a derivative of the -- if you think of it as a derivative of the Lerner index, it's -- it's looking at how the profit maximizing price changes in response to a change in cost.

And then you look at the most common functional forms. You'll often see that marginal cost drops out of the pass-through equation.

BY MR. RAPHAEL:

Q. Well, does it drop out when you're looking at an ad valorem cost?

A. In this case, it drops out of the pass-through equation, yes.

Q. Okay.

And can the amount of a developer's marginal cost, other than the service fee, affect the amount of pass-through?

A. Not under the Logit model that I'm using. It's conceivable it could in others, but in my Logit model -- not -- in the Logit

The most -- I mean, the most obvious one would be processing fees. But there are other marginal costs, royalty fees that they pay, but -- but I haven't estimated those at the developer level.

Q. One of the inputs into your pass-through model is Google's market share in a world without the challenged conduct.

A. Not in the pass-through model. Did you mean to say -- it certainly -- Google's market share is in Rochet-Triole and it's in Landes-Posner.

Q. Yes. One of your inputs into calculating what Google's but-for service fee would be is Google's market share in the but-for world.

A. Correct.

Q. And you estimated that share to be 60 percent; right?

A. I -- I used as an input the 60 percent because that's the best that the economic literature in busting up monopolies can -- can give to us.

I also, you know, would note -- yes, that is -- that is the best estimate that

I could find in the literature.

Q. Okay.

And that market share estimate is based on an article that attempted to estimate AT&T's market share in the longest in its telephone market in the 1980s?

A. Yes, with one important caveat that you left out, which was after AT&T's anti-competitive tie was unwound, right?

What I -- what I was looking for was the closest analogue in antitrust history in which a dominant firm that had extended its leverage from one market into another was forced to unbundle or break apart the tie. There aren't a lot of such episodes, right, in the history of antitrust for reasons that we could describe -- discuss over coffee, but we, in any event, it's a network industry; it's the monopoly, where the tie gets removed. It's been studied ad nauseam by economists for -- for the price effects that can be attributable. And so I thought that 60 percent was the best estimate.

And in any event, it turns out my -- my in-app model for damages is not that

sensitive to the 60; that is, as you put in different inputs for 60, you go to 70 or if you think that Google share would have fallen to 50, it just turns out that the model is not that sensitive to that input.

Q. Well, do you disagree that if Google's but-for market share is 75 percent, that your damages figure falls by over 40 percent?

A. No, it wouldn't. It would not.

So you're saying if all you did -- see, what -- what Dr. Leonard, respectfully, did was that he kept changing two parameters at a time. He kept changing the but-for share and the actual share. If he held everything constant for Landes-Posner, if you change just the but-for share, say, by 10 percentage points, you get, depending on which direction you go, you get something on the order of a 5 percentage point swing in damages.

And so what -- what that's telling you is that the input is important, but the results don't vary significantly, or let's just say the results aren't amplified based on the change in this input; that they're, in

[redacted]

[redacted]

opting in and participating in a loyalty program, and if the benefits for doing so are paltry, that could affect how many people take advantage of the program.

Q. Right.

There are costs to opting into a rewards program; right?

A. Yes.

Q. Okay.

And in the -- in your Play Points damages model, you assume that all Play Store users would have signed up for the Play Points program?

A. No.

Q. You don't?

A. No, not necessarily. What I'm trying to solve for is the extent of a subsidy that Google would have offered across -- in the aggregate across all users, but I don't think that I'm necessarily assuming that each user avails itself. It's possible that it would, but my -- my damages model for aggregate damages is looking at the savings to the class if Google were to be more generous in its subsidy program.

Q. Your Play Points model measures the damages that consumers would have incurred in the aggregate?

MS. GIULIANELLI: Objection to the form.

THE WITNESS: I think that my model is being offered for an estimate of aggregate damages, among other things; I think it also speaks to injury and impact. But I -- I -- I believe that that -- that -- that parameter that comes out that we're interested in, which is the price on the consumer side of the market, is telling you across all consumers, this is -- this is what -- what -- what Google will pay.

BY MR. RAPHAEL:

Q. Does your Play Points model tell the jury how much a user who did not sign up for Play Points in the actual world was damaged?

A. You could estimate, for a given member of the class, you could estimate what the reduction in -- in his or her net payments would be relative to what they spent in the actual world. And you wouldn't abandon that exercise simply because they didn't use Play

Points in the real world. In the real world, the reason why most people or many people didn't use it is because Google was so skimpy with the offering.

In a but-for world in which Google is forced through competition to employ a more generous points model, including making the enrollment easier, they'd -- they'd be forced to. Under -- in a competitive market, it would be reasonable to assume that -- that most, if not all, consumers in the class would -- would partake and -- and take advantage of that -- of that program.

Q. Are you offering the opinion that all users in the but-for world would have signed up for the Google Play Points program?

A. Economists tend to be reluctant to say all, like do I know with certainty or to a reasonable certainty that every single class member signs up? I don't know if the model can tell us that.

What the model is telling us is what's the -- what is the aggregate or average subsidy that Google offers. And I think that it is reasonable to infer that if the subsidy

gets sufficiently large such that it is a meaningful reward, that most, if not all, consumers will take advantage of it in the but-for world.

Q. Have you estimated what portion of users would have signed up for the Play Points program in the but-for world?

A. I feel like that question is no different from the -- from the last.

I have not given an empirical estimate of the proportion. I think it's very high, it could be close to 100 percent, but there's no requirement that it's a hundred percent for the model to -- to hold.

Q. If I were to come to you with a user chosen at random from the data that you've looked at of people that used the Google Play Store, could your model tell me whether that user would have signed up for the Google Play Points program in the but-for world?

A. I don't think the model tells you whether a user will sign, but what the model can tell you is what the subsidy, what the predicted subsidy would be for that user. And if the subsidy is as large as these models are

implying, whether it's the Rochet-Triole model or the Amazon model, these are big numbers; we're talking about [redacted] percent savings.

It seems like a safe inference is that if a -- if Google wants to credit you between [redacted] and [redacted] percent, I'm going by memory, of the -- of the price of partaking in all the fun of its Play Store, that most, if not all, consumers will avail themselves of that option.

Q. Have you calculated the minimum value of the Play Points subsidy that would be necessary to get any consumer to sign up for Play Points?

A. I haven't calculated it down to the decimal, but my opinion is this; that in the actual world, with a -- with a paltry subsidy of [redacted], you see many people not availing themselves of the option.

In a but-for world where the subsidy is in the order of [redacted] percent, if we -- if Google matches Amazon, I think a safe inference is that all or almost all consumers will avail themselves of that option.

Q. Well, your Play Points model, though, is about the percentage of the price that would be credited back to consumers, not the percentage of Google's revenue; right?

A. Oh, no, no, no. Hold on. We're on the same page, I think. It's the percentage of the price from the consumer's perspective; right?

Q. Right.

A. And so if -- if in a but-for world, Google takes its subsidy from, say, [redacted] to [redacted], right, that is a material change in the terms of the program, at which point you're looking at all your friends who are getting [redacted] off and you say hey, sign me up, I'll take some of that, too.

Q. Right.

Have you calculated the percentage credit on the price that would be necessary for any consumer to find it worth it to overcome the cost of signing up and sign up for the Play Points program?

A. I haven't calculated the percentage, but I will say that in a but-for world where

Google is going head-to-head with a -- with a competitor who is competing on this dimension, whether it's Amazon or Facebook or Samsung, that Google would make sure that whatever enrollment costs there were, they would not be so prohibitive as to allow that rival to eat their lunch.

Q. Have you done any analysis of the elasticity of demand for the Play Points program?

A. I have done elasticity of demand of consumers with respect to pricing in the App Store. So to the extent that Play Points or any subsidy changes pricing, you could figure out what the sensitivity would be.

Q. But you haven't tested whether what happens when Google changes its Play Points subsidy and how that affects whether people sign up for the Play Store -- for the Play Points program; you haven't done that?

A. Well, it's a bit of a trick question here, because Google has been at -- at this paltry [redacted], you know, since the advent at least in the U.S.

Now, there are some experiments

that you might be able to look at. In Korea and Japan, I think that Google tried to meet the limited competition that -- that occurred there with an increase in the subsidy. But I haven't studied -- I haven't studied what the reaction would be.

I think it's safe to infer that Google felt, and this is just kind of basic economics, that Google felt compelled to meet the competition because they feared that if they didn't -- if they weren't competitive on that dimension, they would lose customers.

Q. Your Play Points model also uses the elasticity of demand from an article about AT&T long distance in the 1980s?

A. That's of the rival elasticity, that's right.

Q. Right.

And that's drawn from the same article as the article where you got the but-for share for Google; right?

A. Correct.

Q. And you didn't calculate the elasticity of demand in the but-for world yourself?

A. Well, this is -- remember what we're talking about is the rival supply elasticity. So Google by the tie doesn't allow any rival to enter and expand, and now you're asking me where's your -- where's your model, Singer, for how PayPal or Stripe, you know, would have responded to an increase in Google's price. They couldn't come in by virtue of the tie.

So I don't think that -- that life, by virtue of Google's restrictions and the challenged conduct here, is going to allow us to test for rival supply elasticity particularly in the but-for world.

Q. You didn't present your Amazon Coin damages model at the class certification stage?

A. That's correct.

Q. Why not?

A. I don't think that I had data at that -- at that time to estimate Amazon's subsidy.

Q. And your Amazon Coins damages model is used for calculating aggregate damages?

MS. GIULIANELLI: Objection to the form.

THE WITNESS: Correct. That -- that's fair, among other things. But I think that the primary purpose here, now that we're at the merits, is what the -- what aggregate damages are.

BY MR. RAPHAEL:

Q. And if I -- again, if I took a user at random from the -- from the data on the users of the Google Play Store, could your Amazon Coins model tell me whether -- how much in subsidy that consumer would have received?

A. Yes.

Q. And could it tell -- and -- and is your idea that the subsidies in your Amazon Coins model would have been part of a program that all users would have signed up for?

A. I think that once you get into the [redacted] range, I think that it would be irrational and illogical for a consumer to pass up that savings. They would figure out a way to get enrolled.

Q. Okay.

But you -- again, you haven't studied, with respect to your Amazon Coins model, the percentage of savings that would be

models and I think they're both reasonable.

Q. So you can't say whether it's more reliable for the -- to estimate damages at the [redacted] that you have for the Amazon Coins model or the [redacted] that you have for the Play Points model?

A. No. And you keep -- you keep going back to the difference in the magnitude. That's just because we have such a large base of spending.

What we're really trying to figure out is as we toggle between the [redacted] of the Play Points and [redacted], which is about [redacted], should we -- should we credit Google with an incumbency advantage or should we not.

I think there are legitimate arguments that would suggest that if entry by a rival were to occur early enough in the place for experience, then it would be -- it would be too charitable to Google to credit it with an incumbency advantage, right? If Google were facing a rival right out of the gate, right, what's the source of its -- of its incumbency advantage?

Q. Have you formed an opinion as to which of the numerous different damages models that you have is the most reliable one for the jury in this case?

A. I think it's -- it's hard to compare models that are meant to do different things, right? We've got some models that are meant to -- to come up with but-for take rates and pass-through in the -- in the primary market. We've got a different model that's meant to predict the but-for take rate in the aftermarket.

I don't know how one would say that one is better than the other. I feel like these are the best that economics has to offer for each of the -- each of the problems that I've been given.

Q. Did you consider using any other App Store as a benchmark for your subsidy model rather than the Amazon App Store?

A. It's -- it's certainly possible I considered. One -- one problem that I had, for example, with the ONE Store is that the ONE Store is competing along both dimensions. I think they took their take rate down and

they did a more generous subsidy program. And remember, in this -- when we go down this branch of the tree, we're thinking about competition that only occurs on one dimension; namely, take rate.

And the second thing that -- that worried me about ONE Store is that it's -- it's specific to Korea and Amazon was -- was global. And so I felt that -- that we just didn't have as good of a benchmark as Amazon for -- for that parameter.

Q. Okay.

A. Oh, there's one more reason, too, is that I don't think we have the magnitude of ONE Store's subsidy. We have the dollar amount, I found press articles that said it's X hundreds of millions of dollars, but I -- I -- I wasn't able to -- to generate a -- a subsidy in terms of percent of spend for ONE Store.

Q. Okay.

MS. GIULIANELLI: Pretty soon we can take a break for lunch.

MR. RAPHAEL: Sure.

BY MR. RAPHAEL:

Q. Did you -- did you analyze whether any of the benchmark App Stores in Table 7 offer subsidies and whether you could use those as benchmarks?

A. I did not.

Q. Okay.

Just a couple more questions and we can take a break for lunch.

A. Okay.

Q. Now, users sign up for Play Points and then they earn points when they make purchases; right?

A. Correct.

Q. And Amazon Coins have to be purchased separately?

A. Correct.

Q. Did you consider whether that difference could affect whether the Amazon Coins program is a proper benchmark?

A. I certainly considered it, and I just want to make clear that in my -- in my but-for world under this model, I am not positing that Google mimics Amazon's program verbatim, right. I recognize there are differences in the program.

A. Close. It's just -- yeah, the share of that developer within its category, that's right, its market share.

Q. Right.

And so what the regression is looking at is if the developer changes its price, does that reduce its share of the app category; right?

A. Right. Implying that -- that there would be substitution away from that app towards what consumers perceive to be substitutes.

Q. Right.

And does the regression that you ran that looks at the change in price and its effect on the developer's share of its category tell you anything about where the substitution, as you put it, comes from?

A. Where it comes from is, of course, the app who is raising the price. Did you mean to say where it's going? I don't -- where it's coming from --

Q. Ah, thank you for that.

A. Okay.

Q. I'll ask a better question.

A. Okay.

Q. So your regression that you ran in connection with your Logit model, does it tell you where, when a developer raises its price, where consumers will substitute to within the category?

A. This -- this particular model, or at least for this purpose of a model, or this stage of the model, it is simply telling you that the developer loses share. But once you know that the model fits and is the best demand system for the data, you can infer that users are moving around the category in proportion to the market share of the -- of the other goods.

Q. Okay.

But the regression is one of the things you used to determine the fit of the model; right?

A. Correct.

Q. Okay.

And the regression, itself, does not tell you when a developer raises its price or lowers its price, I guess, to which apps do the other -- do the consumers substitute;

right? It doesn't tell you that?
A. Correct.
Q. Do you agree that the relevant product market should include all competitive constraints?
A. No.
Q. Is product quality --
A. Can I -- also, can I just say why? I mean I --
Q. Sure.
A. Just to be clear, you don't need to include all competitive constraints because there could be some very weak constraints that don't prevent the exercise of market power.
So if the guidelines are telling you to include only those that are necessary in order to effectuate a price increase over competitive levels, so that was the only part I was pushing back on.
It's not all competitive constraints, right? It's not every one under the sun. And maybe we could define what you mean by competitive. But -- but I took it to mean literally any competitive including weak, right? We don't need weak constraints to be

[redacted]

[redacted]

[redacted]

[redacted]